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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/830,478 | 06/29/2001 | Christian Speth | P/3781-4 | 8170 |
| 24998 | 7590 | 02/10/2004 | EXAMINER | |
| DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP 2101 L STREET NW WASHINGTON, DC 20037-1526 | | | LANGEL, WAYNE A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1754 | |
| DATE MAILED: 02/10/2004 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.



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DATE MAILED:

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

- ☒ Responsive to communication(s) filed on 12-15-03
- ☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire _____ month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-11 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-11 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of Reference Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6-8 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Murayama et al. in view of Lee '891 (newly cited). Murayama et al. is relied upon as discussed in the last Office action. The difference between the process disclosed by Murayama et al., and that recited in applicant's claims, is that Murayama et al. do not disclose that the cooling agent should be a eutectic mixture of potassium nitrate, sodium nitrate and sodium nitrite. Lee '891 discloses an ammonia synthesis method in which the heat exchange medium constitutes a eutectic mixture of potassium nitrate, sodium nitrate and sodium nitrite. (See the paragraph bridging columns 6 and 7, and column 10, lines 2-19.) It would be prima facie obvious from Lee '891 to employ a eutectic mixture of potassium nitrate, sodium nitrate and sodium nitrite as the cooling medium in the process of Murayama et al., since Murayama et al. imply at column 4, lines 21-26 that any known cooling medium may be employed, and

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specifically mentions molten salts, and the methods of Murayama et al. and Lee '891 are both directed to ammonia synthesis. Applicant's argument, that the detailed description of Murayama et al. solely refers to methanol synthesis, is not convincing, since the teachings of Murayama et al. are not limited to the detailed description. Applicant's argument, that new dependent claim 11 recites a step of contacting the ammonia synthesis gas at a temperature range of between 300°C and 600°C, is not convincing, since it would be obvious from Lee '891 to carry out the ammonia synthesis in the process of Murayama et al. at a temperature of 330 to 380°C, since Lee '891 teaches at column 9, lines 18-25 that a syngas stream heated to a temperature of approximately 330° to 380°C is directed to the reactor supply manifold 62 via line 204 for cooling the reactor catalyst bed.

Claims 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama et al. in view of Lee '891 as applied to claim 1 above, and further in view of Lee '582. Lee '582 is relied upon as discussed in the last Office action. It would be further obvious from Lee '582 to carry out the process of Murayama et al. in two or more reaction zones with intermediate withdrawal of an ammonia rich effluent stream between the reaction zones, since Lee discloses such an arrangement in the Figure of the drawing, and the description thereof from column 4, line 14 - column 6, line 50.

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Claims 3, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama et al. in view of Lee '891 as applied to claim 1 above, and further in view of either Pinto or Porter. It would be further obvious from either Pinto or Porter to separate the ammonia rich effluent stream formed in the process of Murayama et al. into a stream of unconverted ammonia synthesis gas and an ammonia product stream, and recycling the unconverted ammonia synthesis gas to the reaction zone, since Pinto and Porter both disclose such conventional expedients. See the Abstract of Pinto in lines 50-78 on page 1 of Porter.)

Claims 1-11 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation of "selected from . . ." is improper Markush terminology. The phrase should be changed to --selected from the group consisting of . . .-- to avoid this rejection.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS

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ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne A. Langel whose telephone number is (571) 272-1353. The examiner can normally be reached on Monday through Friday from 8 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on (571) 272-1358. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-0994.

WAL:cdc
January 28, 2004

Wayne A. Langel
WAYNE A. LANGEL
PRIMARY EXAMINER